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Digitizing Scent and Flavor: A Copyright Perspective

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DIGITIZING SCENT AND FLAVOR: A COPYRIGHT PERSPECTIVE

*Amara Lopez**

*Should the flavor of a cheese fall under copyright protection? The Court of Justice of the European Union recently confronted this question in *Levola Hengelo BV v. Smilde Foods*. Although the court ultimately denied protection, its reasoning opened many doors for those seeking intellectual property protection for scents and flavors. The court implied that it was the subjective nature of a cheese flavor that bars it from enjoying the protection copyright affords, which begs the question of what would happen if there were a sufficiently objective way to describe a flavor.*

Recent developments in technology have led to the digitization of scent and flavor. In the intellectual property space, digitization provides a superior means of fixation for scents and flavors but it also threatens to make reverse engineering much easier. This would take away the protection trade secret law affords to scents and flavors. This will undoubtedly push industry leaders to seek more protection from the law. This Note explores how copyright law in the United States and the European Union might handle this new technology and argues that protection should not come in the United States until Congress weighs all considerations and adds a new subject matter category for scents and flavors to the U.S. Copyright Act

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“Aromyx is Google Maps for Taste and Scent. It provides the flavor directions to get to any scent or taste.”¹

INTRODUCTION

Digitizing music revolutionized the music industry by shifting distribution from CDs to Internet streaming platforms that share files instantly. The music industry is still dealing with the impact of the monumental change that came with digitization.² Today, developing technology may do the same thing to our olfactory senses of scent and taste.

The new technology digitizing scent and flavor has endless applications. In the medical field, it could detect diseases by measuring a patient’s breath. In the consumer product industry, it could accurately detect food ingredients and spoilage.³ In theory, this technology could allow a digital flavor “to be transmitted by e-mail or over the internet, without transmitting any physical object.”⁴ A person could experience a product’s flavor⁵ in a

1. AROMYX, <http://www.aromyx.com> (last visited Apr. 3, 2020) (quoting Dr. J Bruce German, Professor, University of California, Davis).

2. The difficulty associated with technological developments is reflected in the frustrating complexity of the Orrin G. Hatch–Bob Goodlatte Music Modernization Act (“MMA”). “The MMA is over 100 pages long, and is ‘Exhibit A’ for why people hate lobbyists and lawyers so much.” Chris Castle, *The Music Modernization Act – The Devil is in the Details*, MUSIC TECH. POL’Y (Feb. 8, 2018), <https://musictechpolicy.com/2018/02/08/guest-post-by-schneidermaria-the-music-modernization-act-the-devil-is-in-the-details>.

3. See Kristopher Sturgis, *Could a New Biosensor Be Able to Smell Cancer?*, MDDI ONLINE (Sept. 20, 2018), <https://www.mddionline.com/could-new-biosensor-be-able-smell-cancer>.

4. John T. Cross, *Trademark Issues Relating to Digitalized Flavor*, 19 YALE J.L. & TECH 340, 345 (2018).

5. The word flavor here means “the full sensation experienced by the combined senses of taste, smell, and the other senses.” *Id.* Using flavor to think about application of this new technology is helpful because it encompasses both relevant senses of taste and smell. *Id.*

way divorced from the product itself through a stimulus device, making it possible for a digital flavor to become a commodity in its own right.⁶ Significantly, *digitization* allows flavors to be copied exactly and to exist permanently without degradation – a problem that the *chemical* reproduction of flavors faces.⁷ But can the technology help, for example, the Kraft Heinz Company protect the comprehensive *flavor* of the Kraft Macaroni and Cheese from imitations?

One reason why the digitization of scent and flavor is important for proprietors of scented or tasted goods is that it threatens the protection afforded to them by trade secret law. The ability to analyze a flavor and then create an exact replica makes legal reverse engineering much easier. This Note will explore the technology that quantifies scents and flavors at this completely new level of detail from a copyright law perspective, with some comparison of the legal landscape between the United States and the European Union (“EU”). I will begin by explaining the law governing copyright as it pertains to scent and flavor today, before digitization. Following that, I will discuss how this new technology changes the analysis. I will conclude with insights on whether copyright protection should extend to a scent or flavor based on the introduction of this new technology.

Levola Hengelo BV v. Smilde Foods, originating in the Netherlands and heard in the Court of Justice of the European Union (“CJEU”), addressed the copyrightability of a cheese flavor. Dicta in the case left many unanswered questions as to what exactly is copyrightable. In particular, the case stated that taste is not copyrightable because it cannot be pinned down or expressed objectively, and that it is instead “identified essentially on the basis of taste sensations and experiences.”⁸ Can the fact that developing technology will be able to do just that—objectively express a taste—afford scent and flavor works IP protection where there was none before?

I. THE TECHNOLOGY: DIGITIZING SCENT AND FLAVOR

Humans experience smell, and thereby taste, through nerve cells called olfactory receptors.⁹ These receptors react to odoriferous molecules that enter the organs inside our noses and mouths.¹⁰ The receptors carry a neuro-

6. *Id.* at 358.

7. *Id.* at 348.

8. Case C-310/17, *Levola Hengelo BV v. Smilde Foods BV*, 2018 EUR-Lex CELEX 899, ¶ 42 (Nov. 13, 2018).

9. See Reginald Chapman & Elizabeth Bernays, *Olfactory Receptor*, ENCYCLOPAEDIA BRITANNICA, <https://www.britannica.com/science/olfactory-receptor> (last visited Dec. 19, 2019).

10. A recent study showed that olfactory receptors are also found on the tongue. See *Smelling with Your Tongue*, SCIENCEDAILY, <https://www.sciencedaily.com/releases/2019/04/190424083405.htm> (last visited Mar. 22, 2020).

message from the scent molecules to the olfactory bulb, a nerve structure in the brain.¹¹ The electrical signal is next sent deeper into the brain, where the conscious representation of smell then occurs.¹²

The conscious processing of a smell happens differently with each person. This is largely because some of the brain regions processing a scent are also involved in memory. That subjectivity is coupled with a so-called “olfactory illiteracy”; humans are not adept at naming or recognizing scent.¹³ But despite this illiteracy, humans are *capable* of discerning scent more than it might currently seem.¹⁴ If not due to human inability, it could be that the market for scent is less developed than the market for sound (music) or sight (visual art – paintings, movies, etc.), leaving less opportunity and reason for humans to exercise their olfactory senses. It could also be that the market for olfactory senses has not developed *because* there has not been an accessible means of categorizing and recording scents and flavors.

Imagining digitization of olfactory senses is not an intuitive endeavor, and it is being done in different ways.¹⁵ The company Aromyx, for instance, is engineering “biosensors” that replicate the 402 olfactory receptors humans have and use to smell and taste.¹⁶ A sample of a scent or flavor is put onto a disposable chip with a digital readout, where a plate reader extracts data from it.¹⁷ That data is then used by software to create digital representations of the scent or flavor that can detect disease, food spoilage, and more. The company calls its technology “a camera for taste and smell”¹⁸ that provides a way to analyze, generate, and synthesize scents and flavors with

11. Chapman & Bernays, *supra* note 9.

12. *Id.*

13. See Alastair Gee, *The Uneducated Nose*, NEW YORKER (Feb. 26, 2015), <https://www.newyorker.com/tech/annals-of-technology/naming-scents-uneducated-nose>.

14. *Id.*

15. One company created a device that can receive and transmit scents concocted by users and curated to go along with a “scent playlist.” The product’s creators have more ideas for commercializing scents, including the idea of adding a sensory element to the moviegoers’ experience. See Meg Miller, *The Harvard Professor Who Is Digitizing Scent*, FAST COMPANY (Apr. 29, 2016), <https://www.fastcompany.com/3059380/this-harvard-professor-is-digitizing-scent>. Others plan to enrich the museum experience with scent. See Linda Tischler, *First Transatlantic “Scent Message” Sends Smell of Paris to New York*, FAST COMPANY (June 17, 2014), <https://www.fastcompany.com/3031990/first-transatlantic-scent-message-sends-smell-of-paris-to-new-york>. Various new companies are experimenting with flavor profiling of foods using an ingredient’s scent, ranging from a tool that measures consumer taste and dietary preferences to an application that helps users select complimentary ingredients based on the flavors of what they have in their kitchen. See Catherine Lamb, *Services that Combine Flavor and AI Are a New Food Tech Trend*, SPOON (Mar. 7, 2018), <https://thespoon.tech/services-that-combine-flavor-and-ai-are-a-new-food-tech-trend>.

16. *What is Aromyx?*, AROMYX, <https://www.aromyx.com> (last visited Mar. 22, 2020).

17. Catherine Lamb, *Aromyx’s “Camera for Taste and Smell” Can Digitize Flavor*, SPOON, (Sept. 19, 2019), <https://thespoon.tech/aromys-camera-for-taste-and-smell-can-digitize-flavor>.

18. *Id.*

specificity to detail we have not reached before.¹⁹ This technology and its potential impact will be the focus of this Note.

As technology around scents and flavors grows more impressive, competitors in traditional markets across various industries and products continue selling a whole *experience*. Art exhibits are infusing the air of museums with unique scents to evoke emotions and trigger memories.²⁰ The clothing store Abercrombie & Fitch has long been known for its bold use of scent-machines spewing cologne so strong, you could smell it from outside the store. The company recently rebranded, and with that rebranding came a fragrance change. The company turned to scent to help solidify its new identity, “hoping to draw in new customers and distance itself from associations of the oversexed A&F of yesteryear.”²¹

Abercrombie & Fitch is not the only one capitalizing on scent experience. In fact, there are companies dedicated entirely to ambient scenting. They work with master perfumers to curate signature scents for hotels and retail stores that evoke the desired response from customers as they enter the space and that provide a unique branding opportunity.²²

The continued commercial use of scents for branding or user experience, paired with a revolutionary technological breakthrough in how we can analyze and manipulate these scents, could lead to a push for protection from the law. Because a patent is limited in duration and requires public disclosure of the invention in exchange for protection, trademark protection does not extend to functional marks, and trade secrets are vulnerable to reverse engineering, actors will look to other areas of intellectual property law to secure legal protection for their scent or flavor. I now briefly consider these options and then examine whether copyright protection extends to a scent or flavor.

19. “No one has ever been able to fully measure or quantify a smell, until Aromyx. Aromyx has developed a proprietary method to standardize and visualize the entire olfactory pattern of any given odorant substance, making this information actionable for customers. Aromyx analytics helps our customers understand unique sensory patterns of their product as it changes over time; the difference between products A and B; and contaminants or pathogenic signatures indicating spoilage. This understanding enables optimization of production processes and new product development.” *Products*, AROMYX, <https://www.aromyx.com> (last visited Mar. 4, 2020).

20. Jared Keller, *Fear and Loathing at the Museum of Feelings*, SMITHSONIAN MAG., (Dec. 8, 2015), <https://www.smithsonianmag.com/arts-culture/fear-and-loathing-museum-feelings-180957473>.

21. Christopher Luu, *Say Goodbye to the Scent of Fierce in Abercrombie & Fitch Stores*, REFINERY 29 (July 16, 2017, 8:15 PM), <https://www.refinery29.com/en-us/2017/07/163590/abercrombie-fitch-fierce-store-scent-change>.

22. Mark Wilson, *Confessions of a Store Smell Designer*, FAST COMPANY (Oct. 11, 2016), <https://www.fastcompany.com/3064512/confessions-of-a-store-smell-designer>.

II. INTELLECTUAL PROPERTY OPTIONS FOR A SCENT OR FLAVOR

Legal protection of a scent or flavor can come from a variety of sources, including trademark, trade secret, patent and copyright law. Trademark law protects marks so that consumers can correctly identify the source of goods. Patents protect inventions and require novelty, usefulness, and non-obviousness. Trade secret law helps protect certain information that derives value by virtue of it being secret. Copyright, by contrast, is a set of exclusive rights relating to an original work of authorship and, like with patents, requires thinking about what the law seeks to promote in order to refrain from stifling innovation. This necessarily means that not all artistic or creative works will receive protection. Each of these legal doctrines would treat scent and flavor differently.

The Lanham Act²³ governs trademarks in the United States. The Act broadly defines trademark as “any word, name, symbol, or device, or any combination thereof” that identifies and distinguishes the goods of one from those of another.²⁴ The U.S. Supreme Court has stated “it is the source-distinguishing ability of a mark—not its ontological status as color, shape, fragrance, word, or sign—that permits it to serve these basic purposes.”²⁵ Although there are few limits on what is capable of serving as a trademark, there are only a few instances where a scent has done so.²⁶

23. Trademark Act (Lanham Act) of 1946, 15 U.S.C. §§ 1051-1127 (2018).

24. *Id.* § 1127.

25. “Since human beings might use as a ‘symbol’ or ‘device’ almost anything at all that is capable of carrying meaning, this language, read literally, is not restrictive.” *Qualitex Co. v. Jacobson Products Co., Inc.*, 514 U.S. 159, 162 (1995). Additionally, only visually perceptible marks can be registered in certain countries, for example Mexico, France, Germany, and Brazil. Charles Cromin, *Lost and Found: Intellectual Property of the Fragrance Industry; From Trade Secret to Trade Dress*, 5 N.Y.U. J. INTELL. PROP. & ENT. L., 257, 284, 287 (2015).

26. In *In re Clarke*, 17 U.S.P.Q.2d 1238 (T.T.A.B. 1990), the USPTO granted trademark registration to an applicant for the scent of sewing thread and embroidery yarn. The mark was described as “a high impact, fresh, floral fragrance reminiscent of Plumeria blossoms.” *Id.* at 1238-39. The applicant declared that dealers and distributors had come to recognize the brand as the source of scented embroidery products and also noted that other producers could adopt different scents for their products. In this way, applicant’s fragrance presented no obstacle to competitors who wanted to produce scented embroidery products. *Id.* Importantly, “the presence of scent on weaving material provided no utilitarian advantage,” and the USPTO found that it served only to distinguish the yarn from others. Olivia Su, *Odor in the Courts - Extending Copyright Protection to Perfumes May Not Be So Nonscentical: An Investigation of the Legal Bulwarks Available for Fine Fragrances amid Advancing Reverse Engineering Technology*, 23 S. CAL. INTERDISC. L.J. 663, 689 (2014).

In 2018, Hasbro registered a trademark with the USPTO for the smell of Play-Doh. *Hasbro Trademarks a Favorite Smell from Childhood: The PLAY-DOH Scent*, HASBRO (May 18, 2018), <https://newsroom.hasbro.com/news-releases/news-release-details/hasbro-trademarks-favorite-smell-childhood-play-doh-scent>. The mark is described in its registration as the “scent of a sweet, slightly musky, vanilla fragrance, with slight overtones of cherry, combined with the smell of a salted, wheat-based dough.” Registration No. 5467089, USPTO, <http://tmsearch.uspto.gov/bin/gate.exe?f=doc&state=4810:irm2m8.2.1> (last visited Mar. 21,

Trademark protection does not extend to “matter that, as a whole, is functional.”²⁷ A scent or flavor mark would only pass the functionality bar if it were not attached to a product where smell or taste is essential to the product’s use.²⁸ Accordingly, the scent of a perfume or taste of a food would not qualify as a source-identifying trademark²⁹ and are instead better viewed as characteristics of the product. In *New York Pizzeria, Inc. v. Syal*,³⁰ for example, a restaurant chain claimed a competitor had copied the flavor of some of its dishes and brought a trademark infringement action. The court, despite noting that, in theory, a flavor *could* function as a trademark, denied the pizzeria’s claim to trademark protection of their food’s flavor. The court explained this was due in part to the fact that a flavor must have acquired distinctiveness or “secondary meaning,”³¹ but was mostly because of the functional aspect that flavor plays in a food product. Functionality is a high hurdle for flavor marks.³² Specifically, the court noted that the “flavor of food undoubtedly affects its quality, and is therefore a functional element of the product.”³³ The functionality doctrine “ensures that protection for utili-

2020). The amount of evidence required to prove that a scent functions as a trademark is substantial. It is costly to establish acquired distinctiveness among consumers and difficult to pass the nonfunctional requirement. Hasbro’s claim that it had used the mark for sixty-two years, on its own, was insufficient to allow registration. The company had to make an extensive showing of advertising expenditures, gather affidavits from consumers and dealers, and more to prove that the scent had acquired distinctiveness. Response to Office Action at 6, U.S. Trademark Application Serial No. 87/335,817 (filed Nov. 27, 2017), <http://tsdr.uspto.gov/documentviewer?caseId=sn87335817&docId=ROA20171128174227#docIndex=11&page=6>.

A similar description with words of a scent mark would not be sufficiently defined for registration in the EU given that word descriptions are highly subjective and only one scent mark is registered to date. Dennemeyer & Associates SA, *The Scent of a Trademark: Removal of Graphic Representability Requirement*, LEXOLOGY (Mar. 6, 2019), <https://www.lexology.com/library/detail.aspx?g=e797fb9e-1b9d-4fc6-b24a-823a020d8690>.

27. 15 U.S.C. § 1052(e) (2018).

28. For a complete analysis of how a digital scent or flavor could exist as a valid trademark in relation to products where taste and smell are perceived with the product, but not tied completely to the product’s use (i.e. medicines, dental floss, envelopes), see generally Cross, *supra* note 4, at 355.

29. See TRADEMARK MANUAL OF EXAMINING PROCEDURE § 1202.13 (Oct. 2018) [hereinafter TMEP] (“Just as with a scent or fragrance, a flavor can never be inherently distinctive because it is generally seen as a characteristic of the goods.”).

30. See *New York Pizzeria, Inc. v. Syal*, 56 F. Supp. 3d 875, 880-81 (S.D. Tex. 2014).

31. *Id.* at 881 (“As with colors, it is unlikely that flavors can ever be inherently distinctive, because they do not ‘automatically’ suggest a product’s source. [. . .] It is therefore only when a flavor has acquired distinctiveness, or ‘secondary meaning’—that is, when customers have learned to associate the flavor with its source—that it has any chance of serving as a valid trademark.”).

32. See *id.* at 882 (“If the hurdle is high for trademarks when it comes to the flavor of medicine, it is far higher—and possibly insurmountable—in the case of food. People eat, of course, to prevent hunger. But the other main attribute of food is its flavor, especially restaurant food for which customers are paying a premium beyond what it would take to simply satisfy their basic hunger needs.”).

33. *Id.*

tarian product features be properly sought through a limited-duration utility patent, and not through the potentially unlimited protection of a trademark registration.”³⁴

In the rare instances where a scent or flavor is non-functional and can serve as a valid trademark, the digitization technology may prove a useful tool. Developing a way to categorize scent and flavor through digitization can be seen as analogous to the Pantone system for color. A proprietor could use digitization of their scent or flavor mark to more accurately put competitors on notice as to the exact bounds and parameters of the protected trademark. Instead of a word description of the scent mark of Play-Doh, for example, digitizing would allow marks to more clearly define the scope of their protection to competitors, just as the Pantone system does for color.

Flavors can receive protection through the patent system.³⁵ The U.S. Patent Act grants limited duration protection to new and useful inventions, including compositions of matter, that are novel and non-obvious.³⁶ A patent gives the patentee “the right to exclude others from making, using, offering for sale, or selling the invention” for a term of twenty years.³⁷

There are a few factors that would likely prevent many scents and flavors from being patented. Because patents are only available to *non-obvious* inventions, mere combinations of scents and flavors that exist in nature might not meet that threshold and thus would be excluded from protection. Securing a patent is also expensive and time-consuming. The cost and effort of hiring a patent attorney is another practical barrier. In addition to the risk that an application for a patent of a scent or flavor would be denied after substantial effort, there is the fact that patents are disclosed to the public in exchange for the limited protection. These considerations might lead actors seeking protection of a scent or flavor to pursue another route, such as trade secret law.

Most states in the United States have adopted the Uniform Trade Secrets Act (“UTSA”), which defines a trade secret as information that derives economic value from its being kept secret and that is subject to reasonable efforts of maintaining its secrecy.³⁸ One well-known example of a recipe

34. TMEP, *supra* note 29, § 1202.02(a)(ii).

35. For example, a patent was registered for a meat flavor composition, described as follows: “This invention relates to novel artificial meaty flavoring compositions and to processes for preparing them. More specifically, it relates to novel compositions having meaty flavor characteristics such as beef, pork and poultry flavor, compositions from which they may be prepared, methods for preparing them and to novel food compositions containing them.” U.S. Patent No. 3,519,437 col. 1 l. 20 (issued Jul. 7, 1970). Another patent was granted to chocolate-flavor compositions, described as “[n]ovel compositions of matter possessing a chocolatelike flavor and aroma, consisting essentially of a blend of certain sulfides” U.S. Patent No. 3,619,210 abstract (issued Nov. 9, 1971).

36. Patent Act, 35 U.S.C. §§ 101-103 (2018).

37. *Id.* §154(a).

38. UNIFORM TRADE SECRETS ACT § 1(4) (UNIF. LAW COMM’N 1985).

protected by trade secret is the flavor of Coca-Cola. Throughout the company's history, efforts to keep the formula secret included never writing it down, sharing the recipe with a limited number of personnel who are not permitted to travel on the same plane, and locking the formula in bank vaults for decades.³⁹ Coca-Cola certainly makes "reasonable efforts" to maintain its flavor's secrecy. Kentucky Fried Chicken is also known to protect its secret recipe of eleven herbs and spices for its chicken flavor in a vault.⁴⁰ Like patenting, protecting flavor through trade secrecy is expensive, but it is also powerful since it lasts as long as the secret is kept.⁴¹

The UTSA creates a right to bring an action for misappropriation of a trade secret, but there is nothing preventing competitors from reverse-engineering a particular recipe, process, etc., typically considered a trade secret. The enormous amount of manipulation and data that can be extracted from a scent or flavor through digitization threatens the protection that trade secret law provides, potentially weakening the doctrine's ability to protect coveted scents and flavors.

For these reasons, actors would be inclined to pursue copyright protection if such protection were to extend to scents and flavors. The duration of copyright protection is longer than that of patent protection. Copyright does not require public disclosure of the actor's process/method/composition of a scent or flavor and it offers protection from reverse engineering. Additionally, the functionality bar is not dispositive in copyright in the way that it is in trademark. Considering the advantages copyright could afford, I will discuss copyright protection for a scent or flavor in the next section.

III. COPYRIGHT FOR A SCENT OR FLAVOR

A. Copyright Law Origins and Foundation

Copyright is effectively a temporary monopoly facilitated through granting certain exclusive rights: to reproduce that work, to distribute copies of that work, to perform or display the work publicly, and to prepare deriva-

39. *Coca-Cola's Formula Is at the World of Coca-Cola*, COCA-COLA COMPANY <https://www.coca-colacompany.com/news/coca-cola-formula-is-at-the-world-of-coca-cola> (last visited Mar. 4, 2020).

40. Jay Jones, *KFC Recipe Revealed? Tribune Shown Family Scrapbook with 11 Herbs and Spices*, CHI. TRIB. (Aug. 19, 2016, 12:36PM), <https://www.chicagotribune.com/travel/ct-kfc-recipe-revealed-20160818-story.html>.

41. Coca-Cola successfully sued an employee who attempted to share proprietary information, including new product samples, with competitor PepsiCo. Pepsi actually tipped off Coca-Cola when they were contacted by the employee's middle man, prompting Coca-Cola to bring in the FBI and showing how even the fiercest industry competitors respect the importance of trade secrets. Zachary Crockett, *The Botched Coca-Cola Heist of 2006*, HUSTLE (Apr. 28, 2018), <https://thehustle.co/coca-cola-stolen-recipe>.

tive works based on the original.⁴² The rights granted in the EU and the United States are effectively the same.⁴³ Copyright subsists automatically from the moment of creation; there is no requirement to register or apply for copyright protection.⁴⁴

The historical development of copyright law created two distinguishable systems of protection in the United States and the EU. The United States focuses on utilitarian values. The system balances incentivizing authors to create and publish more works on the one hand and facilitating the dissemination of works to the public on the other. The purpose of copyright is to promote welfare for the public good with the assumption that reading, seeing, and hearing more works benefits society. The balance must be socially advantageous – meaning that the benefits of granting copyright to authors must be greater than the costs of granting exclusive rights that impede the free flow of information to society broadly.

The EU system, by contrast, is known as an “author’s rights” (not “copyright”) system. It favors protecting the “personhood” or “personality” of the author and puts more emphasis on protecting the work an author puts in. These rights are seen as natural rights; the author’s creation and control should be up to them, not publishers or other players.

Copyright protection in the United States comes from the Constitution. The Constitution grants Congress the authority to “promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.”⁴⁵ In 1790, Congress enacted the Copyright Act (“the Act”), which articulates that copyright protection is afforded to “original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device.”⁴⁶

The United States and the EU are both signatories of the Berne Convention treaty (“BC”). Each country has its own copyright law regime, but all countries are limited by the BC. The BC protects “literary and artistic works”⁴⁷ in enumerated categories similar to those of the U.S. Copyright Act.

42. See 17 U.S.C. § 106 (2018).

43. See Berne Convention for the Protection of Literary and Artistic Works, art. 8, 9, 11–14, Sept. 9, 1886, S. Treaty Doc. No. 99-27 [hereinafter Berne Convention].

44. See *id.* art. 5(2) (“The enjoyment and the exercise of these rights shall not be subject to any formality.”).

45. U.S. CONST. art. I, § 8, cl. 8.

46. 17 U.S.C. § 102(a) (2018).

47. Berne Convention, *supra* note 43, art. 2. The United States is also a signatory to the Berne Convention.

Directive 2001/29/EC (the “Information Society Directive”)⁴⁸ is an important Directive that was implemented to harmonize aspects of copyright law across the EU. Neither the BC nor the Information Society Directive provide a definition for a “work,” so it is up to the member states to define the term for themselves. A “work” in the EU is typically understood as an “intellectual creation.”⁴⁹

B. Subject Matter and Elements

To receive copyright protection, a work must be of the proper subject matter⁵⁰ and meet certain requirements, including restrictions calibrated to fit certain subject matter categories. The Act enumerates eight categories of copyrightable subject matter,⁵¹ none of which explicitly encompass scent or flavor. Congress clearly intended the list to be illustrative (in theory, scent or flavor could be included);⁵² for practical purposes, however, it is treated

48. Council Directive 2001/29/EC, 2001 O.J. (L 167).

49. WORLD INTELL. PROP. ORG., GUIDE TO THE BERNE CONVENTION FOR THE PROTECTION OF LITERARY AND ARTISTIC WORKS 17 (1978) (“[T]he Convention speaks of ‘works’ but nowhere defines what is meant by the word. But it is clear from its general tone that these must be intellectual creations (the words appear in paragraph (5) of Article 2).”).

50. This Note discusses copyright protection for a scent or flavor alone, but see Malla Pollack, Note, *Intellectual Property Protection for the Creative Chef, or How to Copyright a Cake: A Modest Proposal*, 12 CARDOZO L. REV. 1477 (1991), for a full discussion around protection of a food item in its entirety. The protection of an entire food *dish* seems more akin to the category of pictorial, graphic, and sculptural works and would thus find itself limited by the useful articles doctrine, posing a significant problem for foodstuffs. The technology digitizing scent allows for separation of the flavor from the food and creates fixation in something different than the food item.

51. 17 U.S.C. § 102 (2018) ((1) literary works; (2) musical works, including any accompanying words; (3) dramatic works, including any accompanying music; (4) pantomimes and choreographic works; (5) pictorial, graphic and sculptural works; (6) motion pictures and other audiovisual works; (7) sound recordings; and (8) architectural works).

52. Ellii Cho, Note, *Copyright or Trade Dress? Toward IP Protection of Multisensory Effect Designs for Immersive Virtual Environments*, CARDOZO ARTS & ENT. L.J. 801, 815-16 (2016) (“Moreover, the Copyright Act and its legislative history reflect foresight and intent to expand the scope of copyrightable subject matter to accommodate future technological advances as well as to avoid absolute preclusion of materials that previously considered unsuitable for copyright . . . Furthermore, the House Report suggests that the subject matter of copyright may be expanded to include ‘those which scientific discoveries and technological developments have made possible new forms of creative expression that never existed before,’ and [] those ‘in existence for generations or centuries [but that] have only gradually come to be recognized as creative and worthy of protection.’ Both of these categories leave open the possibility to of embracing works that appeal to taste, touch, and smell as copyrightable subject matter.”).

as exhaustive.⁵³ The BC's protected categories of work are similar to those protected and enumerated by U.S. copyright law.⁵⁴

Beyond falling into one of the above subject matter categories, a work must also meet the following requirements: (1) constitute an original work of authorship; (2) be fixed in a tangible medium of expression (the BC leaves it up to the signatory countries to decide whether "works in general or any specified categories of works shall not be protected unless they have been fixed in some material form"⁵⁵); and (3) extend to expression, not an idea (a negative requirement that works to *exclude* certain works from protection). Together these are the three elements of originality, fixation, and the idea-expression dichotomy.

The subject matter listed in the BC is an exhaustive list, but the treaty sets the *minimum* standard of protection to which signatories must adhere. This means that countries are free to go beyond what is stated in the treaty and extend protection, for example, to scents. In general, both U.S. and EU jurisdictions' subject matter categories appeal to the higher senses of sight and sound.

The EU member states have varying subject matter requirements. The Dutch Copyright Act does not include an exhaustive list of subject matter.⁵⁶ Any work that is perceptible and original may qualify. This led the Dutch High Court in 2006⁵⁷ to rule that the scent of a perfume was, in principle, copyrightable, "even if only perceptible through the nose."⁵⁸ "The Court distinguished the scent of a perfume from its recipe or the liquid containing it, comparing the latter to the paper of a book, which is not subject matter of copyright, whereas the content of the book is."⁵⁹ France, on the other hand, came to the opposite conclusion in 2006. In *Bsiri-Barbir v. Haarmann & Reimer*, the court held that the manufacture of a perfume did not meet requirements for copyright protection as it involved only technical knowledge.⁶⁰

The U.S. Copyright Act allows for new technological forms of embodiment of works. It "has been drafted in ways that would allow courts and the

53. Anthony R. Reese, *Copyrightable Subject Matter in the "Next Great Copyright Act,"* 29 BERKELEY TECH. L.J. 1489, 1499 (2015).

54. See Berne Convention, *supra* note 43, art. 2(1) ("The expression 'literary and artistic works' shall include every production in the literary, scientific and artistic domain, whatever may be the mode or form of its expression.").

55. *Id.* art. 2(2).

56. Kamiel Koelman, *Copyright in the Courts: Perfume as Artistic Expression?*, WORLD INTEL. PROP. ORG. (Sept. 2006), https://www.wipo.int/wipo_magazine/en/2006/05/article_0001.html.

57. HR 16 juni 2006, NJ 2006, 585 m.nt. JHS (Kecofa/Lancôme) (Neth.).

58. Koelman, *supra* note 56.

59. *Id.*

60. Cour de cassation [Cass.] [supreme court for judicial matters] Paris, civ., June 13, 2006, Bull. civ. I, No. 30 (Fr.).

Copyright Office to recognize as copyrightable types of subject matter that Congress did not expressly enumerate in the statute.”⁶¹ This has not happened for scent or flavor. The U.S. Copyright Office, in fact, took the position that the Act grants flexibility in interpreting the *scope* of what can be included in the categories, but that it does not grant authority to *create a new* subject matter category.⁶² As such, the Copyright Office will not register claims of copyright in material outside these categories. An author must wait for the Copyright Office to act, one way or another, on their application before bringing a lawsuit.⁶³ If the Copyright Office refuses registration, a party can still bring an infringement lawsuit but must give notice and copy of the complaint to the Register of Copyrights, allowing the Office opportunity to join as a party to the action.⁶⁴ Congress could add a category to the list, as it did with architectural works in 1990, and, in theory, the Copyright Office *could* register a scent outside the subject matter list. For now, it seems safe to say that because scent and flavor do not fall into any of the enumerated categories, authors of such works will have trouble exercising their copyright in the United States.

Few cases in the United States “touch on the issue of whether tastes and scents are copyrightable.”⁶⁵ Various theories explain this phenomenon. Among the theories is a view that “lower sense”⁶⁶ works are not art, an issue with the inherent functionality of scent and flavor, and a belief that scents and flavors are not sufficiently fixed in a tangible medium of expression.⁶⁷

61. Reese, *supra* note 53, at 1517.

62. *Id.* at 1520 (citing Registration of Claims to Copyright, 77 Fed. Reg. 37,605, 37,607 (June 22, 2012)).

63. Fourth Estate Pub. Benefit Corp. v. Wall-Street.com, LLC, 139 S. Ct. 881, 892 (2019) (“[W]e conclude that ‘registration . . . has been made’ within the meaning of 17 U. S. C. §411(a) not when an application for registration is filed, but when the Register has registered a copyright after examining a properly filed application.”).

64. 17 U.S.C. § 411 (2018).

65. Leon Calleja, *Why Copyright Law Lacks Taste and Scents*, 21 U. GA. J. INTELL. PROP. L. 1, 3 (2013).

66. Scent and taste are known as the “lower senses” as compared to sight and sound, the “upper senses.” Some argue that, historically, a preference has been expressed for works of the upper senses, i.e. visual art and music. An interesting reason for this distinction in assessing what is considered art is that the experience of lower sense works happens more privately; each person smells or tastes something by an putting the scent or flavor inside their body. By contrast, visual art and sounds are expressed and experienced in a more public way, with separation between the person viewing/hearing them and the work itself. For a full discussion on this, see *id.* at 3-4, 18, 21; see also J. Austin Broussard, *An Intellectual Property Food Fight: Why Copyright Law Should Embrace Culinary Innovation*, 10 VAND. J. ENT. & TECH. L. 691, 724 (2008) (arguing that the “vision-centric language of the Copyright Act makes evident . . . the bias of philosophy and law against the ‘lower’ senses.”). Calleja does not believe that prejudice against lower sense works is what keeps perfumes and food dishes from being copyrightable but instead focuses more on the issue of functionality; since all food functions to be eaten and scents function to be smelled, they are not copyrightable. Calleja, *supra* note 65, at 30.

67. Calleja, *supra* note 65, at 3-4.

The EU, on the other hand, has had a number of significant cases involving scent and flavor, and recently explored the bounds of subject matter categories.

In 2017, the Dutch Appeal Court confronted the question of whether a cheese flavor falls within the scope of copyright protection in *Levola Hengelo BV v. Smilde Foods*.⁶⁸ The court referred a number of questions to the CJEU including whether copyright protection is precluded by the fact that the examples of “literary and artistic works” in the BC list only creations that can be perceived by sight and sound. The Dutch court also asked the CJEU to rule on whether the instability of a food product and/or the subjective nature of its taste precluded it from being eligible for copyright protection.

Again, Member States are free to expand beyond the minimum standard of works to be protected under the BC. Not all Member States would extend protection to the flavor of a cheese.⁶⁹ Some states would likely see the issue as falling more within the realm of industrial or even trademark or design protection. These states would say protecting the flavor of a cheese is about protecting a firm’s product, less so about artistic value. The question in *Levola* regarding the objectivity of the expression (the identification of a food’s flavor) is better seen as a factual question on which a court must rule rather than a legal question about copyrightability. Some would point out that if a scent or flavor does not fall into the proper category, it does not mean the scent or flavor is left without *any* sort of legal protection. It would just belong to “other domains, which fall within the realm of industrial property rights or which simply fall outside the (exceptional) IP system and thus are subject only to the (general) rules of freedom of competition.”⁷⁰

The *Levola* opinion, which ultimately denied protection to a cheese, was brief and failed to sufficiently answer the core question of what may qualify as a copyrightable work in the EU. The court stated, “[T]he subject

68. Case C-310/17, *Levola Hengelo BV v. Smilde Foods BV*, 2018 EUR-Lex CELEX 899 (Nov. 13, 2018).

69. See Eugénie Coche, *HEKS’NKAAS at the CJEU: The End of a Cheese-War or the Beginning of a New Copyright Era?*, WOLTERS KLUWER (June 26, 2018), http://copyrightblog.kluweriplaw.com/2018/06/26/heksnkaas-cjeu-end-cheese-war-beginning-new-copyright-era/?doing_wp_cron=1586456052.0751791000366210937500 (explaining how member states France and the United Kingdom, at oral argument in the *Levola* case, argued for the CJEU to preclude the copyrightability of taste); see also Caterina Sganga, *Say Nay to a Tastier Copyright: Why the CJEU Should Deny Copyright Protection to Tastes (and Smells)*, 14 J. INTELL. PROP. L. & PRAC. 187 (2018) (noting the fragmented national precedents across the EU regarding admissibility of sensory copyright and that the “majority view has traditionally excluded that copyright could cover smell and taste, limiting its scope to works that can be perceived through sight and hearing”).

70. Euro. Copyright Soc’y, Opinion on the Pending Reference Before the CJEU in Case 310/17 (Copyright Protection of Tastes) at 4 (Feb. 19, 2018), <https://europeancopyrightsocietydotorg.files.wordpress.com/2018/03/ecs-opinion-on-protection-for-tastes-final1.pdf>.

matter protected by copyright must be expressed in a manner which makes it identifiable with sufficient precision and objectivity, even though that expression is not necessarily in permanent form.”⁷¹

With its emphasis on precision and objectivity, the court opened the door for the technology discussed in this Note. Specifically, the court wrote:

The taste of a food product cannot, however, be pinned down with precision and objectivity. Unlike, for example, a literary, pictorial, cinematographic or musical work, which is a precise and objective form of expression, the taste of a food product will be identified essentially on the basis of taste sensations and experiences, which are subjective and variable since they depend, *inter alia*, on factors particular to the person tasting the product concerned, such as age, food preferences and consumption habits, as well as on the environment or context in which the product is consumed.

Moreover, it is not possible in the current state of scientific development to achieve by technical means a precise and objective identification of the taste of a food product which enables it to be distinguished from the taste of other products of the same kind.

It must therefore be concluded, on the basis of all of the foregoing considerations, that the taste of a food product cannot be classified as a ‘work’ within the meaning of Directive 2001/29.⁷²

The Advocate General’s opinion in the *Levola* case stated “the ability to identify a work with sufficient precision and objectivity and, therefore, the scope of its copyright protection, is imperative in order to comply with the principle of legal certainty.”⁷³ Achieving an objective identification of the taste of a food by technical means is precisely what some of the technology discussed in this Note purports to do.

The *Levola* dicta regarding precision and objectivity is troubling. In contrast to trademark law, there is no copyright registry where artists can search and find whether others’ works are too similar to their own before they embark on making an intellectual creation. Objectivity and precision were never elements for copyright protection in the past, but the CJEU here seemed to introduce them as necessary while ignoring the important questions referred to it by the Dutch court.

On the other hand, copyright is in the realm of *intellectual property*. “The objective identification of property is, and should be, a universal con-

71. *Levola Hengelo BV*, 2018 EUR-Lex CELEX 899, ¶ 40.

72. *Id.* at ¶ 42-44.

73. Op. Advocate General ¶ 58, July 25, 2018, ECLI:EU:C:2018:618.

dition.”⁷⁴ Perhaps there always has been some implicit degree of objectivity in the copyright calculation due to the fact that copyright is rooted in principles of property.

After *Levola*, the element of fixation together with these new factors of precision and objectivity, muddle the analysis of what is copyrightable in the EU. The court clearly requires a work to be objectively represented with precision in order to receive protection, but this might lead to a sort of de facto fixation requirement. This poses a problem because fixation is not a copyright requirement in all EU jurisdictions.

Regardless, it seems that copyright protection will not be granted to scents and flavors based on the current language of EU law. The Advocate General in *Levola* wrote: “I do not rule out the possibility that techniques may be developed in the future to enable the precise and objective identification of a taste or a scent, which could lead to the legislature taking action to protect them using copyright, or other means.”⁷⁵ Thus, *Levola* allows for the possibility of copyright protection for a scent or flavor by digitization.

C. Originality

It is also important to consider the contours of the originality requirement because it might pose problems for copyrighting a scent or flavor. The U.S. Copyright Act protects original works of authorship but does not define the term “original.”⁷⁶ However, case law establishes a low standard for originality. This makes sense. We do not want judges imparting their subjective opinion on a given work’s aesthetic merit. In the United States, the essence of copyright is not to reward authors for hard work but to promote progress of science and useful arts. The latter often means building on others’ ideas and requires leaving certain works unprotected. The author’s substantial effort, also known as “sweat of the brow,” is never enough to render a work original. To be original, a work must owe its origin to the author (independent origin) and contain a level of creativity⁷⁷ that is beyond *de minimis*.⁷⁸

Copyright protection never extends to facts because facts are not “original works of authorship”;⁷⁹ they do not owe their origin to the author. Facts must remain open to the public in order to promote the progress called for in the Constitution.⁸⁰ The originality element means protection is not available to a scent or taste of something occurring in nature because these are under-

74. Jani McCutcheon, *Levola Hengelo BV v Smilde Foods BV: The Hard Work of Defining a Copyright Work*, 82 MOD. L. REV. 936, 945 (2019).

75. Op. Advocate General ¶ 58, July 25, 2018, ECLI:EU:C:2018:618.

76. See 17 U.S.C. §§ 101-102 (2018).

77. *Feist Publ’ns, Inc., v. Rural Tel. Serv. Co.*, 499 U.S. 340, 345 (1991).

78. See *Alfred Bell & Co. v. Catalda Fine Arts, Inc.*, 191 F.2d 99, 102 (2d Cir. 1951).

79. 17 U.S.C. § 102 (2018).

80. See *Feist*, 499 U.S. 340 at 347; Calleja, *supra* note 65, at 7-8.

stood as facts. However, there is an intelligible argument to be made that some scents or flavors can be original expression.⁸¹

The Museum of Arts and Design in New York City houses an olfactory department dedicated in part to placing “scent as an artistic medium alongside painting, sculpture and music.”⁸² In a 2012 exhibit, “The Art of Scent 1889-2012,” museumgoers experienced puffs of scent coming through the walls. This was the first exhibit to celebrate scent as an artistic medium. Museum curator Chandler Burr has stated that he has no problem seeing fragrances as artistic creations. In fact, in an interview with the *New York Times*, he reacted angrily to the idea of describing a scent based on what it is made of, i.e. a citrus scent. “I am completely opposed to this idiotic reductionism of works of olfactory art to their raw materials, which is as stupid as reducing a Frank Gehry building to the kind of metal, the kind of wood and the kind of glass that he used,” he said.⁸³

Human reaction to scent is usually an automatic emotional or physical response. Burr said a challenge he faced “was to get visitors to move beyond their initial emotional responses and memories and to think critically about scent design.”⁸⁴ The intricacies of fragrances and the emotions they can evoke do make it easy to take the leap and consider a scent an intellectual creation full of originality.⁸⁵ However creative scent design may be, simply *being* an art form is not enough to guarantee a scent or flavor copyright protection. There are, of course, other requirements and considerations buried within the legal doctrine.

The BC considers copyrightable works to be “intellectual creations” but does not define this term. It remains up to member states⁸⁶ to expand on originality, but Directive 2001/29/EC (the “Information Society Directive”) promoted harmonization of the originality standard across the EU.⁸⁷ EU Member States define originality with more emphasis on the author’s per-

81. For a full analysis of why food should receive copyright protection, see Pollack, *supra* note 50.

82. Carol Kino, *Fragrances as Art, Displayed Squirt by Squirt*, N.Y. TIMES (Nov. 15, 2012), <https://www.nytimes.com/2012/11/16/arts/design/the-art-of-scent-at-the-museum-of-arts-and-design.html>.

83. *Id.*

84. Jimmy Stamp, *The First Major Museum Show to Focus on Smell*, SMITHSONIAN MAG., (Jan. 16, 2013), <https://www.smithsonianmag.com/arts-culture/the-first-major-museum-show-to-focus-on-smell-1787124>.

85. *Id.*

86. Thomas Margoni, *The Harmonisation of EU Copyright Law: The Originality Standard* 23 (June 29, 2016) (unpublished paper) (on file with the Social Science Research Network) (“However, it will be a matter for national courts to establish whether a specific work meets the ‘author’s own intellectual creation’ definition. In so doing it is safe to assume that courts will be guided – consciously or unconsciously – by their own traditional legal constructions.”), <https://dx.doi.org/10.2139/ssrn.2802327>. <https://dx.doi.org/10.2139/ssrn.2802327>.

87. Council Directive 2001/29/EC, 2001 O.J. (L 167); Margoni, *supra* note 86, at 10.

sonality (Germany: personal intellectual creations; France: “oeuvre de l’esprit”; Italy: works of ingenuity of creative character; United Kingdom: author’s own – owing origin to author, historically including sweat of the brow⁸⁸). In general, the EU considers whether the author made free and creative choices. Indeed, originality centers around the idea of an “author’s own intellectual creation.”⁸⁹

There has historically been variety in the way EU member states define originality and consider factors like the level of creativity and the effort put into a work. In Germany, the “Birthday Train” case sets the standard of originality for copyrighted works at “a degree of creativity which allows, from the view of a public open to art and sufficiently skilled in ideas of art, to be called an ‘artistic’ performance.”⁹⁰ The CJEU opinion in *Football Dataco Ltd v. Yahoo!* addressed whether an author’s intellectual creation requires more than significant skill and labor.⁹¹ The United Kingdom had followed the common law’s general interpretation of originality as being the author’s own – “originat[ing] with its author” – and encompassed the degree of skill and labor involved.⁹² The CJEU ultimately denied the same degree of relevance to the “sweat of the brow” in defining originality, going against the way the United Kingdom had previously defined originality.⁹³

All things considered, it is easy to imagine a scent or a flavor meeting the originality standard in the United States or the EU. With his museum exhibit, Burr showed that a fragrance should be considered creative and artistic. Protection may never be given to a natural scent or flavor, but a complex fragrance or flavor created by an author as the product of their intellect would have no problem meeting the originality requirement in either jurisdiction.

D. Fixation

There is no issue regarding whether a scent or flavor can be fixed in a tangible medium of expression (a scent in a perfume, a taste in a food). Moreover, scent and flavor can also easily exist for a period of time long

88. Margoni, *supra* note 86, at 23.

89. *Id.* at 8.

90. Bardehle Pagenberg, *German Federal Supreme Court: Relationship Between National Copyright Law and National and/or European Design Law (Decision of November 13, 2013 – Case I ZR 143/12 – Geburtstagszug/Birthday Train)*, LEXOLOGY, (Mar. 24, 2014), <https://www.lexology.com/library/detail.aspx?g=347fb9e3-0348-4af9-b7cf-ed1d7449dbf0>.

91. Case C-604/10, *Football Dataco Ltd. v. Yahoo! UK Ltd.*, 2012 EUR-Lex CELEX 115, ¶ 25 (Mar. 1, 2012).

92. Margoni, *supra* note 86, at 10.

93. *Id.* at 24; *Football Dataco Ltd.*, 2012 EUR-Lex CELEX 115, ¶ 46 (holding that “the significant labour and skill required for setting up that database cannot as such justify such a protection if they do not express any originality in the selection or arrangement”).

enough to fit the “more than transitory duration”⁹⁴ requirement in the United States, even without digitization. Perfume scents and food flavors last for hours. However, both are subject to degradation over time: Leftovers do not always taste the same days later, and a perfume can wear off by the end of the day. Constant change over time from degradation could be an issue when a scent or flavor is fixed in the mediums of perfumes or foods.

In *Kelley v. Chicago Park District*,⁹⁵ the Seventh Circuit dealt with the copyrightability of an outdoor wildflower display (essentially a garden). Over time, the garden inevitably fell victim to forces of nature despite attempts to maintain it. Given the ever-changing nature of plant life cycles, the court held the artist had no claim to copyright protection because a “garden’s constituent elements are alive and inherently changeable, not fixed” in the sense required for copyright protection.⁹⁶

Although the *Kelley* decision has been criticized,⁹⁷ if a court can hold a garden is not sufficiently fixed for copyright, then it is easy to see how a court could likewise consider a scent or flavor to be too ephemeral. The new digitization technology purports to resolve this issue, allowing a more accurate and permanent method of fixation and essentially preserving a scent or taste indefinitely.

The BC does not require the element of fixation in a tangible medium of expression. This leaves it up to Member States. Regardless of whether there is a fixation requirement, it is likely that the analysis would conclude the same way in the EU as in the United States. The technology that digitizes scent and flavor, though unnecessary, provides a superior medium of fixation.

The element of fixation when it comes to scent and flavor poses another issue. The tangible medium of expression normally required by scent or flavor is food or perfume, and these mediums leave no room for separability

94. See 17 U.S.C. § 101 (2018) (“A work is ‘fixed’ in a tangible medium of expression when its embodiment in a copy or phonorecord, by or under the authority of the author, is sufficiently permanent or stable to permit it to be perceived, reproduced, or otherwise communicated for a period of more than transitory duration.”).

95. *Kelley v. Chi. Park Dist.*, 635 F.3d 290 (7th Cir. 2011).

96. *Id.* at 304.

97. See, e.g., Dawn Leung, *A Fixation on Moral Rights – The Implications of Kelley v. Chicago Park District for Copyright and VARA Protection*, 4 ARIZ. ST. U. SPORTS & ENT. L.J. 1, 24-25 (2014) (“The order of thought as literally expressed in the statute seems to suggest that a work cannot be perceived ‘for more than a transitory duration’ unless it is sufficiently ‘permanent or stable.’ Another way of saying this is that the work must be ‘permanent or stable’ enough to be perceived for ‘more than a transitory duration’ . . . The Court in *Kelley* seems to potentially contradict this more literal reading of the statute by treating the two ideas the other way around, if not completely separately.”); Kat Kubis, *Uncertain Future for Conceptual Art*, VAND. J. ENT. & TECH. L. JETLAW (Apr. 19, 2011), <http://www.jetlaw.org/2011/04/14/uncertain-future-for-conceptual-art>; *Court: Not All Conceptual Art May Be Copyrighted*, CLANCCO (Feb. 16, 2011), http://clancco.com/wp/2011/02/vara_moral-rights_sculpture_originality.

between the scent or flavor's expression and its function.⁹⁸ This will be discussed next.

E. *Idea-Expression Dichotomy and Separability*

The idea-expression dichotomy is the most important element in the discussion surrounding the copyrightability of scent and flavor. Copyright law constantly seeks to find the right balance between incentivizing creation by protecting works on the one hand and promoting progress by allowing the public broad access to more works on the other. One way that copyright law works to achieve this balance is by mandating that only the *expression* of a work is protected; *ideas* embedded within a work are not.⁹⁹

For sculptural works, more specifically, copyright grants authors temporary monopoly over the *non-utilitarian* expressions of their original work of authorship in order to “facilitate the introduction of ideas into the public domain.”¹⁰⁰ Thus, copyright protection does not extend to aspects of a work that are functionally necessary to the work itself. Protection in this area would unquestionably prevent others from expanding on a given *idea*. If a particular expression of an idea is required to create the work, then it is considered functional, and protecting that functional expression would inevitably cross over into protecting the *idea*.¹⁰¹ Thus, there is no separability and the idea and expression are said to merge.

There are further limits on the scope of copyright protection for certain subject matter categories.¹⁰² An obvious take on defining the function of a food's flavor is that it serves to provide sustenance and to be tasted. If we consider the flavor together with the food item, a dish seems to fit best under the subject matter category of a sculptural work,¹⁰³ making it fall under the useful articles doctrine.¹⁰⁴ However, a fair challenge to applying the useful articles doctrine is “that there is nothing functional that dictates the con-

98. Calleja, *supra* note 65, at 30 (“Because both the dish and the perfume necessarily require immediate bodily contact with these works to access the artist’s expression, neither can escape the inherent privacy and incommunicable aspects attached to the perceiver’s contemplation of the work. As such, they both lack a ‘public enlightenment’ component that justifies the need to extend copyright protection to these works. Moreover, neither a culinary dish nor a fragrance can avoid their inherent utilitarian functions of pleasing the palate or olfactory senses of their perceivers.”).

99. 17 U.S.C. § 102(a)–(b) (2018) (“Copyright protection subsists, in accordance with this title, in original works of authorship fixed in any tangible medium *of expression* In no case does copyright protection for an original work of authorship extend to *any idea*.” (emphasis added)).

100. Calleja, *supra* note 65, at 18.

101. See *Satava v. Lowry*, 323 F.3d 805, 811 (9th Cir. 2003).

102. See 17 U.S.C. §§ 112–122 (2018).

103. See *id.* § 113 (sculptural works useful article exception).

104. Useful article is defined as an article having “intrinsic utilitarian function.” *Id.* § 101.

tent of striped bass wrapped in potato with a Barolo wine sauce or maple-bacon ice cream.”¹⁰⁵ It is true that menu items in some of the world’s most elite restaurants are focused on providing an experience and presenting an artistic creation for the patron to enjoy, maybe even more so than they are focused on the taste of the food.¹⁰⁶ Regardless of whether chefs are more focused on providing an experience, the narrow aspect of flavor (not the entire dish) undeniably plays a functional role in food. Furthermore, there may have been only one way (the recipe) to express the idea (the flavor). Copyright law protects the form, not the function, of a work.

Separability is particularly important with scents and flavors because humans might have a difficult time discerning between similar flavors. If so, then granting copyright protection for scents and flavors would be more likely to suppress competition and innovation. For example, if the limited monopoly granted through copyright applies to a strawberry flavor of yogurt, it could foreclose too broad a spectrum of that flavor from use. The idea of that strawberry yogurt flavor merges with its expression. However, this restriction holds less weight if with time we come to understand that the human ability to discern between scents and flavors is more expansive than we thought. Digitization might provide a means for humans to better train and exercise these senses.

To the extent that a scent or flavor is its own work instead of blended together with an entire food dish under the sculptural work subject matter category, there are other options. The scent or flavor might deserve either its own category or be better suited under the literary works category (a digitized scent or flavor as software). To the extent that a given flavor is attached to the food and thus the constraints of the sculptural works category (such as the useful articles doctrine), the flavor still arguably should not be barred from protection for being functional. This is because the protection sought is for the fixed aesthetic flavor experience, not the entire dish. The experience of a flavor should be viewed as an original sensory expression separate from the food item experience. Digitization propels this separation between flavor and food.

105. CHRISTOPHER JON SPRIGMAN & KAL RAUSTIALA, *THE KNOCKOFF ECONOMY: HOW IMITATION SPARKS INNOVATION* 68 (2012).

106. Today, “extreme culinary innovation” puts forth dishes that “push the envelope of good taste; a few even are bizarre and arguably inedible.” *Id.* at 62-63. This niche market of the culinary scene might speak more to food as visual art, however, and is thus beyond the scope of this Note’s focus on flavor, only one of multiple aspects in a dish (texture, temperature, presentation being some others).

F. *Synthesizing the Elements*

As discussed with regard to originality, copyright protection will never be given to a flavor that occurs naturally, like that of a fruit.¹⁰⁷ Originality in flavor becomes more complicated when we think of a cheese artisan creating a block of parmesan through an intricate, creative method. Would the resulting cheese flavor be considered as occurring in nature? One might conclude that copyright protection for a food would only extend to more synthetic flavors resulting from complex recipes and processes that require a certain degree of creative input from the author. This runs into the problem in both the United States and the EU that sweat of the brow is not sufficient to warrant protection. Here, the process of making a flavor might find refuge in patent law, not copyright. The question at the center of this Note is not how to protect the method this new technology employs to create a digitized scent or flavor; that is a question for patent law. The question is whether the technology somehow changes the analysis of scent or flavor copyrightability.

Modern society is prepared to call chefs, artists¹⁰⁸; they are undoubtedly as creative as painters and writers.¹⁰⁹ Their dishes are often considered an artistic experience. It is clear by looking at photos of the dishes that a chef indisputably “creates” a flavor with significant original input. But this cannot change the fact that a flavor will inherently play a functional role when the means of expression is a food item.

The treatment of recipes offers insight into the copyrightability of a dish. Courts and the U.S. Copyright Office have held that recipes¹¹⁰ – mere

107. In the United States, this comes from the requirement that works be created by a human being. See *Burrow-Giles Lithographic Co. v. Sarony*, 111 U.S. 53, 58 (1884). In the EU, this comes from the fact that originality requires a degree of creativity that is the author's own intellectual creation. Ana Ramalho, *Ex Machina, Ex Autore? Machines that Create and How EU Copyright Law Views Them*, WOLTERS KLUWER (Nov. 12, 2018), http://copyrightblog.kluweriplaw.com/2018/11/12/ex-machina-ex-auctore-machines-that-create-and-how-eu-copyright-law-views-them/?doing_wp_cron=1586463541.0557339191436767578125.

108. In her note from 1991, Pollack persuasively advances why food should be considered an art form and sets forth an argument for why food items should be copyrightable as such. Pollack, *supra* note 50.

109. SPRIGMAN & RAUSTIALA, *supra* note 105, at 59 (“For millennia, chefs throughout the world have labored to create delicious food. Yet for most of that history they labored in obscurity. . . . [C]hefs were rarely treated as artists on par with their peers in the visual or literary arts. . . . Today, of course, star chefs seem to be everywhere.”).

110. Cho discusses virtual reality employing various senses in creating scenes, in particular the application of copyright and recipes in the context of virtual reality: “In *Publications International, Ltd. V. Meredith Corp.*, the Seventh Circuit concluded that the compilation of Dannon Yogurt recipes is copyright eligible, but not the individual recipes. . . . The court distinguished between functional and creative elements and categorized individual recipes as functional. In applying the *Meredith* court's reasoning to VR multisensory schemes, it is the *compilation* of various sensory effects, rather than the individual sensory elements, that neces-

listings of ingredients – are statements of fact and thus not subject to copyright protection.¹¹¹ Moreover, copyright protection does not extend to dishes themselves because a dish functions to be consumed.¹¹² The EU comes to the same conclusion.¹¹³ For dishes to be copyrightable, they “must be sufficiently expressive and not merely functional combinations of tastes.”¹¹⁴ This has been the heart of the problem before digitization. “Consequently, the utilitarian aspects associated with works derived from taste necessarily subsume their artistic expressiveness,”¹¹⁵ and thus the work’s expression and its use are said to merge. The inherent appeal to the subjective interests of the person experiencing the taste or smell is “inescapably driven by their utilitarian function”¹¹⁶ and for that reason, recipes and dishes are not afforded copyright protection.¹¹⁷ Analogous reasoning can be applied to a fragrance.

Scholars have advanced the argument that recipes are not so different, or should not be, from another work that copyright law protects – sheet music. At its heart, sheet music is nothing more than a set of instructions.¹¹⁸ To some, the treatment of food and fashion by the law (the useful articles doctrine) is quite dull: “We eat food because we are hungry, and the qualities of a dish are thought to be dictated by functionality, not aesthetics.”¹¹⁹ Likewise, “the law deems the dress a useful article, effectively the same as a smock.”¹²⁰

Regardless of convincing criticism, these limiting doctrines advance the argument that there is no tangible medium of expression for a scent or taste

sitates copyright protection. . . . Just as ‘[t]he identification of ingredients necessary for the preparation of each dish is a statement of facts,’ and thereby precluded from copyright protection, a mere use of a particular sensory effect would not be copyright eligible. Instead, a VR designer could reasonably argue that the particular, unique sequence and arrangement of multisensory effects and the creative expression that results from such design overcome the idea-expression dichotomy.”

Cho, *supra* note 52, at 817-18 (emphasis in original).

111. *Publ’ns Int’l v. Meredith Corp.*, 88 F.3d 473, 480 (7th Cir. 1996); Calleja, *supra* note 65, at 11.

112. Calleja, *supra* note 65, at 13-14.

113. Benjamin Beck & Konstantin von Werder, *Your IP Valentine: Can Recipes Be Protected by Copyright?*, LEXOLOGY (Feb. 14 2017), <https://www.lexology.com/library/detail.aspx?g=bcf1b075-c275-4461-abcd-877819c64238>.

114. Christopher J. Buccafusco, *On the Legal Consequences of Sauces: Should Thomas Keller’s Recipes Be Per Se Copyrightable?*, 24 CARDOZO ARTS & ENT. L.J. 1121, 1156 (2007).

115. Calleja, *supra* note 65, at 14.

116. *Id.* at 14, 28.

117. Cho, *supra* note 52, at 814 (“Copyright law shelters only works that appeal to ‘high’ senses, a practice that becomes especially apparent when courts articulate the distinction between aesthetic and utilitarian objects in determining copyrightability of useful articles with pictorial, graphic, and sculptural aspects.”).

118. See Pollack, *supra* note 50, at 1506 n.163.

119. SPRIGMAN & RAUSTIALA, *supra* note 105, at 67-68.

120. *Id.* at 68.

that would afford it protection. On a scientific level, the lower senses have a sensory immediacy not present in work involving the higher senses of sight and sound, which “operate at a distance from their objects”¹²¹ and can be perceived and communicated in a public sense. Because of the sensory immediacy with scent and flavor, the *idea* that the author of a scent or a taste wishes to *express* is “inextricably tied to its expression in a private way.”¹²² Scents and flavors are intended to be smelled and inhaled or tasted and eaten, making them “too tightly bound to the sensation, resulting in an inability to detach the *idea* of a taste or scent from its *expression*.”¹²³ To grant copyright to a food dish (not just its flavor) might restrict public access to the idea itself, which would run counter to the fundamental purpose of copyright protection.

The European Copyright Society “is of the opinion that smells and tastes constitute raw material that, in the same way as “ideas,” are excluded from copyright protection.”¹²⁴ The EU legal doctrine seems to be taking a different approach. The *Levola* case discussed earlier raises interesting questions. The case says in dicta that the subjective nature of a flavor prevents it from receiving protection. This has led the IP community to conclude¹²⁵ that if a company can overcome this hurdle, then copyright protection may be within reach for scents and flavors.

The suggestion in the case that the subjective nature of scent or flavor bars them from copyright protection is misguided. The inability to adequately describe a flavor in an objective manner is not the only reason a flavor is not copyrightable, and it might not be any reason to deny protection. It is doubtful that humans perceive colors on a painting or sounds in a song any less subjectively than they taste the flavor of a food or smell the scent of a fragrance. Variation in human sight, age, hearing ability, and more make the experience and perception of all art subjective. The inability to separate a scent or flavor from its function in most instances (in a food or perfume, for example) poses the main barrier. To the extent that a scent or flavor is a separate aesthetic expression standing apart from a dish or perfume, and that the *Levola* court meant there was no means to separate that out, then a new

121. Calleja, *supra* note 65, at 23.

122. *Id.* at 21.

123. *Id.* at 25.

124. Euro. Copyright Soc’y, *supra* note 70, at 6.

125. Saneep Goyal & Carol Goyal, *Taste of Cheese Cannot Be Copyrighted, But Perfume Can Be, Say EU Courts*, BUS. STANDARD (Nov. 18, 2018), https://www.business-standard.com/article/economy-policy/taste-of-cheese-cannot-be-copyrighted-but-perfume-can-be-say-eu-courts-118111800129_1.html (“To win a copyright case, companies need to find a way to ‘objectively’ convey the ‘taste’ of their products. The ‘description’ of ‘taste’ will become critical to copyright filings in the future. Such descriptions will have to be detailed, and defensible for uniqueness. Otherwise the courts may find copyright applications for taste of food difficult to digest.”).

medium of fixation can advance an argument for scent and flavor protection.

IV. APPLICATION OF THE TECHNOLOGY TO COPYRIGHT FRAMEWORK

Digitizing will change the way we understand and experience scent and flavor. As the technology develops, it may become more accessible and find new uses in the world that will lead more people to explore and experience scent and flavor in uncharted ways. Authors of sufficiently original scents and flavors will inevitably look to protect their creations. In the United States, this could mean lobbying to create an additional subject matter category that explicitly includes scent and flavor. In the EU, this could mean somehow taking advantage of the door that *Levola* seemed to open.¹²⁶ But the actual *digitized* scent or flavor is no different from a literary work in the copyright world (software). The question there becomes more about what that software copyright protects – does it protect the code or the underlying scent or flavor the code expresses? Beyond this question, it is worth considering how the technology can be useful in this space even though it may not substantively change the answer to the question of whether scent and flavor are copyrightable.

Before discussing how the technology fits into copyright law framework, it is worth noting the practical concerns that come with the idea of granting copyright protection to a scent or flavor. One concern is undermining competition:

[O]ne worrying aspect of the protection of perfumes is the risk that it could lead to undue monopolies. Most humans do not have a highly developed sense of smell and can only distinguish a limited palette of scents. Different perfumes, for example, may readily be held to be alike, and infringements quickly found. As such, the protection of perfumes could undermine competition to an undesirable extent, allowing only a few perfumes to exist lawfully side-by-side.¹²⁷

This worry, whether warranted or not, might be what has kept lower sense works outside of copyright protection. Perceived human inability to distinguish scents might simply be because there has been little opportunity or incentive to do so.¹²⁸

126. Digitizing transforms scent and flavor into data. Certain processing or uses of scent and flavor data could easily fall under the EU's General Data Protection Regulation ("GDPR"). This potential is beyond the scope of this Note, but certainly worth pointing out. Council Regulation 2016/679, 2016 O.J. (L 119).

127. Koelman, *supra* note 56.

128. It is worth noting that a concern for color depletion was advanced and shut down in *Qualitex*. See *supra* note 25, *Qualitex Co. v. Jacobson Products Co., Inc.*, 514 U.S. 159, 162

Because U.S. copyright law functions to encourage the creation of new works, either by facilitating the dissemination of works to the general public or by incentivizing authors to create, protecting scent or flavor might stifle this. If monopoly is broadly construed, creations are unavailable to the public for use and new authors are not encouraged to enter the market for fear of infringing a protected work. The EU's emphasis on author's rights might change the way we think about this dynamic because there protecting author's creations weighs more heavily. With scents or foods, it begs the questions: Who is the author whose rights we hope to protect? Would protection mostly go to corporate conglomerates of food production and perfume manufacturers?

Without going further into that discussion, it is important to look at whether the technology changes any of the elements required for copyright protection in the first place. If the technology will not lead to a different result, then there will be no use for this new technology in answering the question of whether copyright should extend to olfactory creations.

A. *Idea Expression Dichotomy and Separability*

According to its website, "Aromyx has developed a proprietary method to standardize and visualize the entire olfactory pattern of any given odorant substance, making this information actionable for customers."¹²⁹ Standardizing and visualizing scents seems to amount to a digital readout of scent. This might be similar to a recipe for a dish or a fact itself (and even more similar to a software code for a computer program, which will be discussed shortly). The code created for a particular scent or taste is a description of the particular fragrance or flavor. This, similar to a recipe for a dish, describes the composition of the work. That scent or flavor code is likely to be viewed as a fact, not a copyrightable work of authorship.

Put another way, a digitized flavor is an exact copy. If copyright protection is not extended to a dish for the reasons articulated above, then it seems logical that protection would not extend to the exact digital copy either. Again, this is for instances where the scent or flavor in question is inseparable from the dish itself (the flavor of macaroni and cheese) and is functional (taste plays a role in the experience of eating a dish). The question is different if protection is sought for the separate aesthetic experience of a scent or flavor.

(1995) ("This argument is unpersuasive, however, largely because it relies on an occasional problem to justify a blanket prohibition."). The court also noted that the functionality doctrine would further serve as a safeguard against the concern of color depletion. *Qualitex*, 514 U.S. at 168-69.

129. AROMYX, <https://www.aromyx.com> (last visited Apr. 3, 2020).

B. Subject Matter

A scent or flavor must be considered copyrightable subject matter. It does not fall within the categories of the U.S. Copyright Act or the BC. Recall that Member States of the EU can expand their list of qualified works beyond the minimum required by the BC, but we saw how the CJEU handled the Dutch High Court's finding that a cheese flavor is, in theory, protectable.

Digitization might bring a scent or flavor under literary work, similar to the treatment of computer software programs. To illustrate, complex fragrances are better described as a scent *composition*. A scent has three notes. "The 'top note' is the first impression of the scent and is the most aggressive, the 'middle note' is the body of the scent, and the 'base note' lingers after the other notes dissipate, giving the fragrance a depth and solidity."¹³⁰ The question would be *what* is protected? Protection would probably extend not to the scent encoded, but only to the actual coding itself.

Software program protection in copyright considers a programmer's written code as literary text. The doctrine of copyright for computer programs is complex. As with all copyrightable works, protection is given to the extent that the code incorporates authorship in the programmer's *expression* of original ideas, as distinguished from the ideas themselves. If other methods of expressing a computer program idea are foreclosed as a practical matter because there is really only one way to write the code, then there will be no protection given. This is called a "merger" between the idea and expression. It will depend on the complexities of digitizing scent and taste whether this line of thinking will apply. It might be that there are so few ways to digitally express the idea of a scent or a flavor that protection cannot be given to the underlying "scent code."

Unlike the computer software revolution, scent and taste have existed since the beginning of human existence. But it is hard to imagine how a novel technology, not yet broadly available to the public, with the potential to revolutionize how we experience lower senses, might change our perception of a literary work. However, fitting software into the literary work categorization makes much more sense in terms of the developed legal doctrines. Object and source code are considered languages, and the end result of a string of source code or object code is a work perceived by the higher sense of sight. It is also worth noting that squeezing computer software under the category of literary work for the purpose of copyright protection has

130. Jimmy Stamp, *The First Major Museum Show to Focus on Smell*, SMITHSONIAN MAG. (Jan. 16, 2013), <https://www.smithsonianmag.com/arts-culture/the-first-major-museum-show-to-focus-on-smell-1787124>.

not been without much criticism and controversy.¹³¹ Furthermore, protection of a scent or flavor's digital readout would go to the code, not the scent or flavor itself.

It is true that dicta in *Levola* opened up the window for a scent or flavor to be considered copyrightable should it lose its subjectivity and find a way to be described objectively with precision. It is hard to say that digitization changes the fundamental *nature* of a scent or flavor. It seems instead to change how those senses are experienced, replicated, shared, stored, or transported – their fixation. But we know that most scents and flavors are already meeting the fixation requirement (i.e. scent in liquid perfume). The issue is that the traditional mediums for scent and flavor pose problems with separability.

C. Originality

There are advocates who believe chefs and perfumers create works just as original in their expression as an artist who paints and should therefore benefit from the same rights as painters, writers, and musicians. But the question of whether chefs and perfumers are creative artists is not dispositive of copyrightability. Original expression is only one of many factors to consider in affording a given work copyright. Regardless, the technology here would not change the persuasiveness of the current argument(s) concerning scent and flavor's originality.

An analogy might be helpful. Musicians' works were considered sufficiently original far before the digitization of music took place. Being able to record, permanently store, and transport musical works digitally did not affect the question of whether they were works of original expression, and it certainly did not affect the question of whether they were copyrightable subject matter. It simply improved the way music could be perceived, which seems to be what this technology will do for scent and flavor.

V. SHOULD COPYRIGHT PROTECT SCENT AND FLAVOR?

The first question addressed in this Note was whether scent or flavor are copyrightable. Traditionally, this question has been considered only when scent and flavor are fixed in mediums such as food or perfume. The next issue discussed was how the digitization of scent and flavor changes the analysis by providing a new means of fixation. An important question to think about now is whether we *should* afford protection to scents and tastes via copyright and why this new technology sparks debate.

131. Ralph Omar, *Computer Software as Copyrightable Subject Matter: Oracle v. Google, Legislative Intent, and the Scope of Rights in Digital Works*, 31 HARV. J.L. & TECH. 639, 640 (2018).

Scent or flavor, as an aesthetic experience separate from a food dish or perfume, fit the requirements of copyrightability. A scent or flavor can be made with significant creative and intellectual input from the author. *Levola*'s suggestion that flavor cannot be described with precision will surely be overcome by technology. Before sound recordings, music arguably could not truly be described with precision. There was, however, sheet music. The ability to write down music might have played a role in its historical protection under copyright as compared to olfactory works. Digitization theoretically could introduce a means of "writing down" scents and flavors and certainly can provide a new means of fixation.

That scents and flavors are creative works worthy of copyright protection does not mean that they should receive protection right now under the current copyright regime. The fact that scent and flavor cannot fit neatly into any enumerated subject matter category is a good reason not to give them copyright protection. Attempting to fit scent and flavor into an existing category would pose problems. The fashion industry, without recourse to trade secret or patent protection like the food and perfume industries, has a history of pushing for its own explicit category in the Copyright Act to combat fast fashion copying.¹³² Considering that some perfume scents and food flavors *have* received patent protection as a composition of matter or a process, copyright law should not become a back door to receiving arguably broader intellectual property protection. On the other hand, because digitization could threaten trade secret protection and some scents and flavors will not meet patent requirements, copyright protection becomes an even more attractive option.

In 1990, Congress enacted the Architectural Works Copyright Protection Act, which added architectural works as a protected subject matter category.¹³³ The term "architectural work" is defined in the Act as "the design of a building as embodied in any tangible medium of expression, including a building, architectural plans, or drawings. The work includes the overall form as well as the arrangement and composition of spaces and elements in the design, but does not include individual standard features."¹³⁴ Much consideration went into this addition.¹³⁵ The definition itself excludes standard features likely to be found in all buildings, meaning that these building features will not receive copyright protection. The exceptions contemplate the fact that architectural works are often in public spaces where they are sus-

132. For more information on the fashion industry's attempts and the Copyright Office's views on protection for fashion designs, see *Protection for Fashion Design: Hearing on H.R. 5055 Before the Subcomm. on Courts, the Internet, & Intellectual Prop. of the H. Comm. on the Judiciary*, 109th Cong. 2 (2006) (statement of the United States Copyright Office).

133. Architectural Works Copyright Protection Act, Pub. L. No. 101-650, 104 Stat. 5089 (1990).

134. 17 U.S.C. § 101 (2018).

135. H.R. REP. NO. 101-735, at 10-15 (1990).

ceptible to passerby taking photographs or making drawings of them. Likewise, architectural works are subject to updates, alterations, or even destruction by building owners. Ordinarily these actions would violate the exclusive rights granted to authors, and so the new category was crafted to permit pictorial representations and alteration and/or destruction of buildings.¹³⁶

It does not make sense to incorporate scents and flavors into one of the existing subject matter categories. Copyright protection should not extend to scents and flavors unless Congress carves out a distinct category. This would allow for consideration of what exceptions make the most sense in order to best advance the goals of copyright law. The fact that most scents and flavors would be tied to a food item or perfume is an important consideration that would require statutory drafting that limits protection of the entire food item/perfume itself.¹³⁷ Congress is best suited to consider whether other areas of intellectual property law are sufficiently protecting scents and flavors right now (for example, patent law) and also to analyze relevant empirical data, like the extent to which humans are capable of discerning between scents and flavors such that any protection of them is properly calibrated and does not foreclose too many from use.

CONCLUSION

The digitization of scents and flavors will change the way we analyze, experience, and use them. It changes the fixation of scent and flavor so that they can be permanent and stable as well as exist as a separate sensory aesthetic experience of their own. In particular, the technology brings an increased threat of reverse engineering that could damage trade secret protection and cause irreparable harm. This makes it important that the law preemptively considers how this technology might affect intellectual property protection of scents and flavors. As discussed in Parts III and IV, there is complexity around scents and flavors regarding fixation and functionality. Because of this, caution should be exercised before granting protection within the copyright law framework as it currently stands in the United States and in the EU. As the technology digitizing scent and flavor continues to develop, Congress should consider adding a new subject matter category to the Copyright Act for the aesthetic experience of scent and flavor. This would allow for appropriately carved out copyright protection for scent and flavor that incorporates exceptions in order to address the novel issues that arise with these sensory works.

136. *Id.* § 120.

137. It is far from clear that the food industry is uniformly committed to copyright protection in chef's creations. In fact, the culture of the industry might suggest otherwise. *See* SPRIGMAN & RAUSTIALA, *supra* note 105, at 76-77.